39) The method of claim 6 wherein said carbon foam has a density of between about 0.3 g/cm^3 and about 0.4g/cm^3.

40) A semi-crystalline, largely isotropic, coal-based carbon foam having a thermal conductivity below about 1 W/m/°K.

41) The carbon foam of claim 1 having a density of between about 0.1 and about 0.8 g/cm^3.

42) A coal-based carbon foam produced by the direct heating of comminuted coal particles in a pressure controlled mold and under a non-oxidizing atmosphere to a temperature ranging from about 300° C to about 700° C.

43) A method for producing carbon foam comprising directly heating comminuted coal particles in a pressure controlled mold to a temperature ranging from about 300° C to about 700° C.

44) A method for producing a coal-based carbon foam comprising:

A) comminuting coal containing adequate volatiles to permit foaming thereof upon the application of heat, to a small particle size to form a ground coal;

B) placing said ground coal into a mold;

C) heating said ground coal in said mold under a non-oxidizing atmosphere to a temperature and for a period adequate to produce a controlled foaming of said coal to form a preform; and

D) controllably cooling said preform.